Short-Dosage Video Training and Brief Coaching for Paraprofessionals

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We have no known conflict of interest to disclose.

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Supplemental files are available for this review.

Abstract

Paraprofessionals are increasingly utilized to support students with intensive needs, yet they often lack the training and skills to provide evidence-based academic and behavioral interventions. Since on-the-job training is the primary method of skill acquisition for this group of school support staff, efficient and feasible training modalities are necessary. In the current study, we implemented a video training and brief coaching model to instruct paraprofessionals on the use of behavior specific praise (BSP). We employed a single-case withdrawal design to examine the effects of the training package on paraprofessionals' praise rates and student disruption and task engagement. Results indicated the presence of a functional relationship for paraprofessional praise rates and variable effects for student behavior. The paper concludes with recommendations for research and practice as it pertains to preparing paraprofessionals to support students with disabilities.

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Paraprofessionals and Students with Intensive Support Needs

The reliance on paraprofessionals to support students with disabilities in classrooms remains a common practice and is projected to increase over the next decade (Bureau of Labor Statistics, 2019; Giangreco et al., 2010)). Students with comorbid disabilities, such as those autism, intellectual disability, multiple disabilities, and a co-occurring behavioral challenge tend to receive paraprofessional support more frequently than students with other disabilities (Walker et al., 2020). The reason for assigning paraprofessionals to students with extensive support needs is that many practitioners consider one-to-one adult supervision as the most intensive and effective type of support (Suter & Giangreco, 2009). However, paraprofessional assignment alone is insufficient to adequately support students with disabilities, let alone those with intensive and complex needs.

Research suggests that providing paraprofessionals with training to implement interventions focused on improving student behavior maximizes their impact (Mrachko & Kaczmarek, 2017). Despite recent increases in research focused on supporting paraprofessional training and implementation within special education, these support personnel continue to be the personnel with the least training and work alongside students with the most intensive needs (Brock et al., 2017; Carter et al., 2009; Cole-Lade & Bailey, 2020). All the while, teachers and paraprofessionals report limited confidence in the latter's skills to fulfill their demanding roles (Carter et al., 2009; Mason et al., 2020). Despite paraprofessionals indicating a desire for more training to boost their skill set, teachers are provided limited opportunities to prepare paraprofessionals to support students with disabilities (French, 2001; Irvin et al., 2018; Jones et al., 2012).

Although there has been more interest in research on training paraprofessionals in the last decade, few investigations focus on the training of paraprofessionals who work with students in therapeutic special education settings. Many students with complex needs require support for self-care, academic task completion, as well as behavior support (Etscheidt, 2006; French 2001; Robinson et al., 1999). In these settings, paraprofessionals are employed to provide direct services to students as part of their individualized education program under the direct supervision of a certified special education teacher (Cole-Lade & Bailey, 2020; U.S. Department of Education, 2018). Despite the intensity of these settings, however, paraprofessionals typically do not receive on-the-job training and when they do, it often lacks in formality (Carter et al., 2009). Moreover, the special education teachers expected to carry out this training report unpreparedness and an inability to devote adequate time to the task (Douglas et al., 2016).

Effective Training for Paraprofessionals

A multitude of strategies exist for training school personnel; however, their effectiveness varies (Brock et al., 2017; Rispoli et al., 2011; Walker et al., 2020). Pyramidal training, didactic sessions, and virtual models such as video trainings have demonstrated promising results (Author, in press). Most often trainers have used multiple methods to achieve successful implementation and research has shown that when feedback is used, trainees have more success (Brock et al., 2017). For instance, Sobeck and Robertson (2020) compared didactic training to performance feedback to analyze their effectiveness in training paraprofessionals to use positive behavioral supports. Through the use of either didactic training or performance feedback, paraprofessionals were taught how to use behavior specific praise (BSP), opportunities to respond (OTR's) and effective instruction and commands. Results of the study demonstrated that both training modalities led to improved implementation by paraprofessionals, but the use of

performance feedback advanced their fidelity at a quicker rate and the results were more likely to sustain over time. The results from Sobeck and Robertson are promising, however, the researchers did not investigate the effects of the intervention on student outcome data.

The use of video and digital methods for training paraprofessionals has also begun to gain traction (Brock & Carter 2015; Murphy et al., 2015; Suhrheinrich & Chan, 2017). Brock and Carter (2015) examined the effects of using video modeling that included pre-recorded strategy lessons and coaching to train paraprofessionals to implement a time delay procedure. One of the aims of their study was to promote the use of video modeling as a cost-effective and feasible method to train paraprofessionals in using research-based practices. Through testing and comparing the effects of video modeling and coaching, both as stand-alone methods of content delivery and as a combined training package, they found that the implementation of coaching produced the most significant results. The follow-up coaching sessions provided practitioners an opportunity to receive individualized and specific performance feedback along with additional modeling. The implication of the study is that although general content can be effectively delivered through digital lessons, coaching should be implemented to provide opportunity for skill generalization and support specific to the learning context. This is particularly true for paraprofessionals working with students with complex needs as they may need several examples on how to use an intervention with students who demonstrate a wide variety of needs (Brock and Carter, 2015; Walker et al., 2020).

Microlearning for Paraprofessionals

Adult learning principles demonstrate that adult learners are self-directed, task motivated, and have a wealth of life-experience (Kenner & Weinerman, 2011). As such, the training of paraprofessionals should be tailored and consider adult learning practices. Microlearning

represents a theory well suited for conceptualizing training for paraprofessionals because of its emphasis on providing short bursts of information in a digital, asynchronous format on a singular skill for no more than a few minutes (Emerson & Berge, 2018). This method of learning has shown that individuals retain more information and perform better on tasks when compared to individuals who learn in more traditional, longer formats (Giurgiu, 2017). Trainings based on microlearning provide asynchronous content delivery that allows trainees to access at convenient times and present information in comprehensible dosages. Once background information is provided, following up the microlearning with coaching has the potential to provide paraprofessionals with an opportunity to demonstrate their newly gained knowledge as well as receive the critical feedback needed for improvement. Behavior specific praise (BSP) represents one such intervention well-suited for the techniques of microlearning.

BSP and Students with Challenging Behavior

BSP is a low-intensity strategy in which teachers provide positive consequences via praise to students for demonstrating appropriate behaviors (Ennis et al., 2020b). In a recent large-scale synthesis, Ennis et al., (2020a) analyzed 57 studies using BSP as an instructional strategy. Across all studies, only four trained paraprofessionals to implement BSP suggesting a need for more research on training paraprofessionals to implement such an accessible practice. Moreover, most trainings described in the review were delivered individually and involved some element of coaching (Ennis et al., 2020a). BSP was used as an intervention specifically in response to student behavior across all studies, for all students ($n=1,946$). Although most often used as an intervention for individuals, several studies used the intervention for whole-class instruction. BSP was implemented across a variety of settings, for students with and without disabilities. Overall, of the 36 studies that reported on student outcomes, 86% resulted in positive gains. The

students included in the studies were most often receiving services for emotional and behavior disturbance indicating a need to examine BSP for students with extensive support needs. The review conducted by Ennis and colleagues highlights the effectiveness of this low-cost, low-intensity tool for classroom practices and further positions it as a strategy for effective implementation of positive behavioral support systems.

Purpose

Our study aims to build on the current literature on the successful training of paraprofessionals, principals of adult learning, and the use of an evidence-based practice for the improved learning outcomes of both personnel and students. As such, we sought to answer the following research questions: (a) Does video modeling and performance feedback result in increased paraprofessionals' rates of BSP? (b) Does paraprofessional use of BSP result in reduced disruptive student behavior? (c) Does paraprofessional use of BSP lead to increased student academic engagement? and (d) What is the social-validity of a video-modeling training package for paraprofessionals?

Method

Participants

Following institutional review board (IRB) approval, the first author began recruitment at a therapeutic day school for students with developmental disabilities in an urban, midwestern city. The first author was invited to discuss the study during planned professional development sessions where staff received instruction on roles and responsibilities, and school policy. The professional development concluded with the first author providing an overview of the need for more research on paraprofessional training and a description of the current research project.

Participants in the professional development were provided an opportunity to ask questions and sign consent forms if interested.

Paraprofessionals and Students with Disabilities

Four paraprofessionals were initially recruited, deemed eligible to participate in the study, and consented. Prior to beginning baseline, one paraprofessional withdrew due to complications regarding scheduling. In order for paraprofessionals to be eligible for the study they had to (a) be currently employed by the district, (b) provide services to a student with intensive educational needs for more than one hour in a given school day, and (c) provide services to a student that met the student eligibility criteria as described below. Once paraprofessionals provided consent, they were given a letter which described the study, provided the authors contact information, and asked to send home consent forms in their student's backpacks. Parent consent was obtained through the return of a consent letter which included information about the study's purpose, privacy procedures, and an invitation to contact the principal investigator with any questions or concerns.

Students were eligible to participate in the study if they (a) were currently enrolled in school, (b) displayed disruptive behavior, and (c) spent 61% or more of their school day separate from general education peers. Student information was verified through each child's special education teacher as researchers were not given access to individualized education plans (IEP's).

Andrew and Bryce. Andrew was a 23-year-old, Caucasian male paraprofessional with one year of paraprofessional experience. Andrew provided one-on-one support to Bryce, a student with autism, across the entire school day. At the time of the study, Andrew had completed his bachelor's degree. Bryce was a 12-year-old male with a diagnosis of autism. He had limited verbal speech, and used pictures, a dynamic-augmentative communication device,

and gestures to communicate. According to his special education teacher, Bryce was typically impulsive, became easily frustrated when prevented from doing a preferred task, and was difficult to soothe when upset. He also enjoyed being tickled, listening to music, and was generally at ease around new individuals. Amongst his favorite activities were swinging and listening to music. Andrew and Bryce were in classroom A, described below.

Caroline and Debbie. Caroline was a female, middle-aged Caucasian women with 9 years of paraprofessional experience. She declined to provide her exact age. Caroline had completed an associate degree and was working towards completing her bachelor's degree in education. She worked one-on-one with Debbie, a 20-year-old female student with multiple disabilities. Debbie had no verbal speech but used a 4-picture GoTalk TM to communicate. In addition, she used a walker with significant adult support to ambulate. Debbie enjoyed listening to songs on a tablet. Caroline and Debbie were in classroom B, described below. According to her special education teacher, Debbie became easily frustrated when unable to do preferred tasks, enjoyed being sung to and quiet activities, and was timid when approaching new situations.

Ely and Felix. With one year of paraprofessional experience, Ely, a 23-year-old Caucasian female was the last paraprofessional participant to enroll. She had some college experience and was very new to working with individuals with disabilities. Ely worked one on one with Felix, a boy also in classroom A. Felix was a 10-year-old male with a primary diagnosis of autism. He enjoyed working on puzzles but had a very difficult time managing his behavior if he was unable to finish them. Felix's special education teacher indicated that he was difficult to soothe when upset; enjoyed looking at books, particularly of ocean scenes; and enjoyed rocking and swinging.

School and Classroom Setting

The study took place at a therapeutic day school that provided full day educational services to students ages 3-21 with autism and developmental disabilities, in a midwestern city. Students are enrolled in the school through a public/private partnership. The school is tuition-based; however, the tuition is often paid by the student's public school. The school provided services to 63 students of which 68% were students of color, in a total of 9 classrooms. Free and reduced lunch status and other demographic information is not publicly available. The mission of the school is to help all students reach their full potential and reach their maximum levels of independence. This study took place in two classrooms.

Classroom A

Two of the paraprofessional-student dyads were in classroom A, Andrew and Bryce, and Ely and Felix. This classroom was a room for students in fifth, sixth, and seventh grade. It served 10 total students, 8 paraprofessionals, and one certified special education teacher. For the duration of this study, observations occurred during one-on-one student IEP goal work, a dedicated time lasting 15-30 min in which paraprofessionals would work with students independently on the English language arts goals outline by each student's IEP.

Classroom B

This classroom contained 9 students total, each with a one-one-one paraprofessional, and one certified special education teacher and provided services to students that were of transition age, 18-22. Caroline and Debbie were observed in this classroom for the duration of the study during morning meeting, a 30-minute period in which students took turns to independently complete calendar, weather and greeting activities with their classmates.

Experimental Design and Procedures

We used a single case A-B-A-B withdrawal design to investigate whether there was a functional relation between the independent variable of online training plus coaching and the dependent variables of paraprofessional rates of praise, student disruptive behavior and student engagement (Gast et al., 2018). A video-recorder was set up in each classroom to record sessions in order for members of the research team to conduct systematic direct observations (SDO). Once a session was recorded, the primary investigator uploaded videos to a secure folder in order to allow access to other members of the research team. The primary investigator did not serve as the primary data collector in order to keep bias at a minimum, however, she was used as an observer for agreement purposes as well as the intervention coach. Recordings of each dyad were scheduled for four sessions per week throughout the entire study. Data collection for each phase, as described later in this manuscript, occurred until steady states of praise rates given by paraprofessionals had been reached for each dyad which was determined through visual analysis (Barton et al., 2018). Once stable responding was determined, the subsequent phase in the research design was initiated.

Pre-Baseline Procedures

Prior to baseline data collection, the functional assessment checklist for teachers and staff (FACTS) interview was conducted with each student's special education teacher and paraprofessional in attendance to identify and define the target student's disruptive behaviors and confirm that BSP was indicated as a potentially effective intervention for increasing student engagement. FACTS is a brief assessment used to determine the function of a student's behavior by interviewing teachers and staff (McIntosh et al., 2008). During the interview, the first author inquired about the environment and routines the student engaged in and then asked the team to rank the likelihood of a behavior occurring during different parts of the day. Once a behavior

was prioritized, the FACTS provided a series of items related to the antecedents and consequences for a more detailed understanding of the behavior.

Baseline Condition

During the baseline condition, participants were instructed to conduct business as usual. In classroom A, observations occurred during independent goal-work. During this time, each student was assigned individualized activities based on their IEP goals which included one or more of the following tasks: answering reading comprehension questions after listening to a short story, following a sensory-diet routine, playing a turn-taking game, or solving simple math equations. Bryce and Felix engaged in one-on-one activities with their paraprofessionals, Andrew and Ely, respectively. Students were seated at their desks which were partitioned off from one another and set up in a cubical style. Goal-work occurred at the same time three days of the week and lasted for approximately 30 min.

In Debbie's classroom (B), observations occurred during morning meeting, during which a daily greeting, an attendance routine, and a check of the calendar and weather were completed. Students sat and waited until it was their turn to "check-in". First, the student identified their photo then they walked around the circle, waved, and verbally greeted each classmate. Students were prompted by the teacher or their dedicated paraprofessional to use their preferred mode of communication to greet one another. Morning meeting occurred daily for approximately 45 min.

Acquisition Phase: Short-dosage Video Training

Paraprofessionals were provided with a series of four online training videos. Paraprofessionals were sent a link to each video and asked to complete it by the next day. Following video completion, they were given a link to access the next video in the series. Videos provided information on BSP, as defined by the research team as a positive, verbal statement that

explicitly and specifically tells a student what they did correctly (Gage, et al., 2018). Specific details regarding content, duration, and topics of each video can be found in Table 1. To collect training fidelity data and assess video training adherence, a link to a four-item online form was made accessible to participants at the end of each training video. Paraprofessionals were asked to click on the link and answer the following items: (1) Name, (2) Did you watch the video? (3) Where did you watch the video? and (4) a video-specific question about the covered content. During this phase, participants were instructed to complete the online training videos, but were not explicitly prompted to implement training content during this phase.

Brief Coaching Condition

Once paraprofessionals completed the training videos of the acquisition phase, they were instructed to begin using the intervention. Coaching sessions were predetermined and conducted in-vivo or through video conferencing, via Facetime™. The method of coaching was determined through a conversation with each participant and factored on the convenience for the classroom as well as the method preferred by the individual. Sessions were conducted by the primary investigator and recorded so that a member of the research team could complete procedural fidelity checks on the coaching sessions of the researcher. Coaching sessions followed a coaching protocol outlined in Figure 1S and occurred during each session after all the digital training materials had been delivered. Each session was intended to last less than 10 min, provide positive and constructive feedback to paraprofessionals, as well as model or give examples of how instruction could be improved. Session content primarily consisted of discussing the use of BSP as well as a question and answer to assist paraprofessionals with other behavioral challenges that were occurring. Furthermore, with the guidance of the coach, participants were asked to set a goal for BSP rates. Following the initial coaching session, participants were asked to watch the

video recording of their previous observation and tally their own rates of BSP using a frequency recording page (see Figure 2S in the supplemental materials) supplied by the coach. Following this one-time self-monitoring task, the coach assisted each participant in setting a goal for their BSP rate. Participants set a new BSP rate goal during each coaching session. Finally, the addition of an adapted praise board was provided to all three participants. The participants were instructed on how to pair the verbal praise statements with the visual board to enhance student understanding. A sample of the adapted praise board is provided in the online supplemental material, **Figure 3S**.

Withdrawal Phase

Once a determination of sufficient stability in BSP rates had been reached in the brief coaching phase, the primary investigator withdrew coaching sessions and prompts for self-goal setting. In addition, she made video training content unavailable to the participants. No further directions were given to the paraprofessionals.

Reintroduction of Brief Coaching Condition

The intervention phase was reintroduced in the same manner as the initial brief coaching condition (see above for detailed procedures). Participants were again provided coaching sessions and were prompted to set praise rate goals. Participants were given access to the previously watched training videos allowing them to re-watch the trainings if they desired. No participants re-watched any videos.

Measurement of Dependent Variables

Systematic direct observation (SDO) was conducted for each paraprofessional-student dyad at the same time each day that data were collected. The research team collected data 3 to 4 days per week dependent on student therapy schedules. Each session was video recorded by the

primary investigator. Recorders were set to capture the student and paraprofessional, and recordings were terminated either at the end of each lesson, or after 20 min, whichever occurred first. Videos were uploaded to a secure file sharing platform and one of three observers from the research team were randomly selected to rate each video.

Each rater used an interval timer that was downloaded to their smartphone and a data recording form that was segmented into 15 s intervals to code each video observation. The occurrence of target behaviors was recorded on the data form during each interval utilizing either frequency recording or momentary time sampling dependent on the variable (see below). Once video observations were completed, observation forms were uploaded to the file storage platform, and the principal investigator charted the data. Data were coded and charted for each session prior to the consecutive observation such that data could be monitored in real-time to inform phase change decisions. That is, once stable responding was determined via visual analysis, the subsequent phase was implemented (Barton et al., 2018; Gast et al., 2018). A stability envelope of 10% was used for Caroline and Ely, however Andrew's trends continued to accelerate with some variability (Barton et al., 2018). Due to time constraints of the school year, it was determined by the team to implement the second intervention phase with Andrew after three data points were collected.

Paraprofessional Praise Rates

Frequency counts of two types of praise statements, behavior specific and generic, were taken during each 15-second interval. BSP statements were defined as an individualized verbal statement or gesture of approval directed toward the target student that was delivered contingent on the student's behavior, and was over and above a statement of adequacy and acknowledgement specifically addressing one of the student's actions. Meanwhile, generic praise

was defined as a positive verbal statement or gesture that did not specifically acknowledge a behavior. For example, “good work” or “good job”. Rates for frequency of praise statements per minute were calculated for BSP and generic praise separately. First, the total number of coded intervals was divided by four to calculate the duration of the observation in minutes. Then, the total frequency of praise statements was divided by total minutes to obtain the rate of praise per min delivered by the paraprofessionals.

Opportunities to Respond

OTR data were collected only for Caroline, the paraprofessional working with Debbie. During baseline observations, the research team determined that Caroline did not provide Debbie sufficient opportunities to display target behaviors and provide praise. As such, the research team modified the training procedures to prepare Caroline to increase the number of prompts throughout sessions to set the occasion for Debbie to demonstrate behaviors to praise. The same procedures were used to measure OTR rates as were used for praise rates (see above).

Student Academic Engagement

On-Task Behavior. Momentary time sampling was used to calculate on-task behavior for two students, Bryce & Felix. Observers recorded whether the student was actively engaged, passively engaged, or off-task at the end of each 15 s interval. Active engagement was defined as vocal and/or motoric behavior related to academic tasks including writing, reading aloud, hand-raising, and speaking to the classroom teacher or other students about academic work. During transition periods, if the student was following the teacher's instructions/expectations, it was coded as active engagement. Passive engagement was defined as orientation of the face and eyes toward appropriate academically relevant stimuli in the absence of academically related vocal and/or motoric behavior. This included listening to a lecture, looking at academic materials, and

silently reading. Finally, off-task behavior was defined as any behavior that did not meet the active or passive engagement requirements. That is, if the student was not engaged with the academic materials, tasks, or activity or there was explicit evidence that the student was engaged in related, but inappropriate activities or materials than expected based on the teacher's or paraprofessional's directions, we coded that interval as off-task. As coders began collecting data, they realized that coding for active and passive engagement was difficult to ascertain, thusly codes were collapsed into on-task and off-task; active and passive were renamed to on-task. The percent of intervals for which each student was engaged was calculated by dividing the number of on-task intervals by the total number of intervals.

Response to Demands. Debbie's engagement was measured differently as the classroom activity during our observations did not provide many opportunities for her to be actively engaged. Instead, to demonstrate rates of improvement, SDO was used to collect frequency data on her independent and prompted responses to demands. Response to demands were defined as given an OTR, the student engaged in a behavioral or academic response as a reaction to the demand. An independent response was marked if after being provided with an OTR, the student engaged or attempted to engage in an academic task without any verbal, gestural, or physical prompting. Other responses were tallied as prompted. Rates for independent responses were calculated in the same manner as the praise and OTR variables.

Student Disruptive Behavior

Frequency counts were employed to measure the rate of student disruptive behavior. The target disruptive behavior for each student was determined through the FACTS interview which was completed with the student's special education teacher and paraprofessional. Shouting-out, defined as any occurrence of non-word verbal noise louder than a talking volume, was selected

as the most critical disruptive behavior for both Bryce and Felix. Biting was deemed the target disruptive behavior for Debbie. Biting was defined as any occurrence of the mouth and jaw opening and closing while making contact with another part of her own, or someone else's body. The rate of disruptive behaviors per min were calculated utilizing the same procedures as praise rates (see above).

Data Analysis

Visual analysis within cases followed procedures as outlined by Barton et al. (2018), using level, trend, and variability of data between adjacent phases to determine if a functional relationship was present. To augment the visual analysis, three types of effect sizes were calculated. Results are described in terms of percentage of non-overlapping data (PND; Scruggs & Mastropieri, 1998) and improvement rate difference (IRD; Parker et al., 2009). These within-case effect sizes were calculated using software created by Pustejovsky and Swan (2018). According to Parker et al. (2009), IRD scores that fall at or below .50 indicate small or questionable effects, scores between .50 and .70 indicate moderate effects, and scores above .70 indicate large effects. In addition, an online calculator from Pustejovsky et al. (2020) was used to report the between-case standardized mean difference (BC-SMD) for BSP and disruptive behavior.

Interrater Agreement

The principal investigator did not collect data firsthand and coded the video data utilizing the SDO procedures solely for interrater agreement (IRA) in order to prevent additional bias while conducting coaching and feedback sessions. Seventeen (32%) video-recordings were coded by a second observer (the principal investigator). Recordings were started at 1 min as to provide time to orient the observer and align observations. Point-by-point agreement was used to

calculate IRA percentage by dividing the number of agreements by the total number of agreements plus disagreements, multiplied by 100 during each interval of the observation (Ledford et al., 2018). A window for occurrence was not used.

Social Validity Questionnaire

A social validity questionnaire was given to each paraprofessional participant to assess their feelings towards the applicability and value of the intervention and training package (Baer et al., 1987). As research on BSP in therapeutic settings with paraprofessionals is limited, understanding the social validity is a valuable step in considering the effectiveness of the intervention and training package. At the completion of the study, each paraprofessional was given a social validity questionnaire that contained 11 items across the following categories: (a) applicability, (b) feasibility, (c) usefulness, and (d) outcome measures. Supplemental Figure 4S provides the full questionnaire. The questionnaire is included in the online supplemental materials (Figure 4S).

Results

Paraprofessional Outcomes

Rates of Praise

The results of the paraprofessionals' rate of BSP implementation are presented in Figures 1, 2 and 3. Across all three paraprofessionals, the rate of BSP improved under the intervention conditions compared to baseline. In addition, while BSP rates across participants improved after receiving online video training, the introduction of coaching led to the greatest improvements in BSP delivery. Descriptive statistics and effect sizes for each participant over the course of the study are included in Tables 2 and 3.

Andrew. Andrew consistently used praise statements from the onset of the study. The mean rate of both BSP and generic praise statements combined was 2.15 praise statements per minute. During the first baseline session, Andrew delivered 1.78 BSP per min but levels decreased throughout the baseline phase. Rates of generic praise remained higher than rates of BSP in four of the six baseline data collection sessions. Over the course of the study, Andrew's rates of BSP demonstrated an overall increasing trend which began immediately after video training was introduced, even with the removal of coaching. An immediate level change occurred with improved rates of BSP after the introduction of the online training videos. Similarly, rates of generic praise decreased showing an abrupt level change during this phase. Following the initiation of coaching and self-monitoring, BSP had an accelerated trend. The PND for BSP between baseline and the combined video training and coaching phases was 67% with an IRD effect size of .83, indicating a positive behavior change. Andrew's rates of BSP continued to accelerate during the withdrawal phase (PND = 0%; IRD = .25). However, once coaching was reinstituted, rates of BSP reached their highest point, and PND between the phases was again 67% with an IRD = .67. Levels of generic praise remained substantially lower than levels of BSP throughout the last three phases, with an increasing trend demonstrated during the withdrawal phase. Across phases the omnibus IRD was .53 indicating the intervention package had low to moderate effects on Andrew's usage of BSP. However, the improvement of Andrew's mean rate of BSP delivery increased from 0.80 BSP statements per min (in baseline to 3.90 BSP per min during the final coaching phase.

Ely. Throughout the baseline phase, Ely had steady rates of generic praise and BSP with minimal variability. Her levels of generic praise in baseline exceeded rates of BSP on all but one data collection session. With the introduction of the training videos, an immediate and abrupt

level change occurred for each type of praise statement. However, those levels tapered off and dropped to near baseline rates. With the introduction of coaching, an abrupt level change occurred, with a substantial increase in the rate of BSP. Ely's BSP rates demonstrated a steep accelerating trend during this intervention phase. The PND between baseline and the combined acquisition and intervention phases was 67% and IRD was .63. When coaching was withdrawn, a level change occurred with Ely's rates of BSP decreasing (PND = 0%, IRD = .38). Once coaching was reintroduced, the level of BSP rates increased (PND = 67%, IRD = .71). Overall, Ely trends for BSP increased with each B phase. The omnibus IRD across phases was .64, indicating a moderate positive change in behavior.

Caroline. In baseline, Caroline had near 0 rates of BSP and comparatively higher rates of generic praise. An immediate decrease in level was noted in the initial observation following the introduction of video training. A steady and steep acceleration occurred, however, following additional video training sessions. Similarly, with the introduction of coaching, a small level change occurred in the negative direction immediately followed by another steep acceleration through the coaching phase. The rate of BSP delivery between baseline and the entire intervention package resulted in PND = 50% and IRD = .67. with a large mean difference (0.93 BSP per min) between the video training phase and the coaching phase. A slight level decrease and a decelerating trend in the rate of BSP occurred following the removal of the coaching package (PND = 0%; IRD = .17). Once reintroduced, the rate of BSP initially increased followed by a decelerating trend to similar levels as the withdrawal phase until the final session in which Caroline delivered improved rates of BSP (PND = 50%; IRD = .50). Similar to the other paraprofessionals, overall trends for BSP accelerated within the first B phase but mean levels of BSP delivery under intervention conditions were only minimally higher than baseline conditions.

Overall, the treatment package resulted in questionable effectiveness of increasing Caroline's rate of BSP as the omnibus IRD effect size for the model was .45.

Opportunities to Respond

Caroline's OTR's (Figure 5) were measured as a second dependent variable but were not used to determine when subsequent conditions were initiated. Levels were variable in baseline, ranging from 0.43 to 1.52 OTRs per minute. Once coaching began, and Caroline was given feedback to assist her student in more engagement, an immediate and abrupt level change occurred in the entirety of phase B, and OTR trends accelerated. Between baseline and B1 the PND = 100% with an IRD = 1.00. Once coaching was withdrawn, an immediate level change occurred with the rate of OTRs dropping resulting in a PND = 25% and an IRD = .38. However, OTR rates demonstrated an accelerating trend with variability throughout the A phase and a decreasing trend once again through the final B' phase ending with a PND = 0% and an IRD = 0.0. The total omnibus effect across phases was IRD = .46.

Between Case Effects. The BC-SMD for BSP between cases was equal to .50 (SE = .30, 95% CI = -.22 to 1.22), indicating a medium effect when using hedges g.

Student Outcomes

Rates of Disruptive Behavior

Bryce. Coders calculated Bryce's rates of shouting-out as his disruptive behavior. Rates were calculated as the number of shout-outs per minute which ranged from 0.00-0.60 with some variability during baseline. Levels decreased between A and B phases although minimally with PND = 0% and IRD = .14. Levels remained low with minimal directional change in trends throughout the remaining phases of the study. Between B1 and A2 PND = 33% and IRD = .50. Whereas between A2 and B2 PND = 0% and IRD = .33, with an omnibus IRD = .44.

Felix. Overall, Felix's rates of disruptive behavior decreased over the course of the study. During the first A phase of the study, the average rate of shout-outs per minute was 0.74 (SD = 0.19) and by the last B' phase the average rate was 0.14 (SD = 0.04). An abrupt level change occurred with a decreasing trend from A to B + B' with a PND = 100% and an IRD = 1.0. Once coaching was withdrawn, Felix's rates of disruptive behavior were variable, staying at the same level for the first session, then reaching their highest point, before decreasing. Between B1 and A2 PND = 25% and IRD = .38. Levels steadied as coaching was reimplemented in the final B' phase (PND = 0%; IRD = .42). The across phases omnibus IRD = .60.

Debbie. Levels of disruptive behavior were highly variable throughout all phases of the study. During phase A, the average rate of her targeted disruptive behavior, biting, was 1.70 per minute (SD = 0.70). The mean rate of biting decreased in B + B' phases (M = 1.20; SD = 0.81). The level of disruptive behavior decreased immediately once phase B was introduced, however, the average rates increased with an abrupt level change with an upwards trend in B' resulting in PND = 33% for A to B + B' and IRD = .33. When coaching was withdrawn between B1 and A2 the PND = 25% with an IRD = .58. Similar levels and trends occurred in the second A to B' phase with a PND = 50% and IRD = .50. Across phases the omnibus IRD effect size = .47.

Between Case Effect Size. The BC-SMD was calculated for student rate of disruptive behavior. The BC-SMD = -.61 (SE = .26 95% CI = -1.14 to -0.09).

Engagement

Bryce. Over the course of the study, Bryce's levels of on-task behavior remained steady with little variability. PND = 0% and IRD = .33 from phase A to B + B'. Between B1 and A2 the PND = 0% with an IRD = .25. Noticeable improvements for percentage of time on task

occurred in the second A and B phases with $PND = 100\%$ and $IRD = 1.0$. Across phases the omnibus $IRD = .53$.

Felix. Engagement levels for Felix did not vary substantially over the course of the study. A small level increase occurred between the first A and B phase with $PND = 45\%$ and $IRD = .33$. When coaching was removed the between B1 and A2 the $PND = 0\%$ with an $IRD = .33$. Engagement changed very little from A2 to B2 resulting in $PND = 0\%$ and $IRD = .17$. Overall, his engagement improved as he was on task 75% of the time in baseline and ended the study with a mean score of being on task during 88% of the observations. Overall omnibus $IRD = .25$.

Response rate

Debbie. The independent rate of response to OTR's accelerated over the course of the study with abrupt level changes from the first A to B once coaching was initiated. $PND = 17\%$ and $IRD = .67$, respectively from A to B + B'. Once coaching was withdrawn, an abrupt level change occurred and independent rates of responding decreased but remained variable. Finally, in the last B phase, $PND = 0\%$ and $IRD = .50$. Debbie's average rate of independent responding also increased over the course of the study, showing improvement from a mean rate of 0.23 responses ($SD = .30$) during baseline to 0.55 independent responses ($SD = .18$) in the coaching reintroduction phase.

Social Validity

All three paraprofessionals found the training and BSP intervention to be highly useful, applicable, feasible, and appropriate ($M = 5.0$, $SD = 0$). In the comments section of the survey, one paraprofessional remarked, "I think the program really made a difference with my student and help to get him on track with a routine." Another participant reported, "I noticed that other paraprofessionals in my classroom are starting to use BSP with their students as well".

Interrater Agreement

Total IOA across all three participants for BSP frequency was 88%, ranging from 67% to 100%. Similarly, the average rate of agreement of generic praise statements ranged between 67%-100% ($M = 86\%$). Total agreement for disruptive behavior was 91% with a range of 69%-100% across observations. On-task rates were only calculated for Bryce and Felix as Debbie's on-task behavior was calculated through response to demands. IOA for on-task behavior rates ranged between 72% and 100% ($M = 89\%$). The overall agreement for the rate of responding to demands was 87% (range: 75%-84%) and 91% (range: 79%-96%) for prompted and independent responses, respectively.

Coaching Fidelity. A member of the research team listened to 100% of the coaching recordings, either an audio or video recording. Using a checklist determined prior to the start of the study, the observer marked if the coach had met the criteria. The coaching checklist is provided in the online supplemental materials Figure 1S. The coaching intervention was delivered with 100% of criteria met during the coaching phase across all participants and sessions.

Discussion

The purpose of this study was to investigate the effects of short-dosage training package for paraprofessionals on their effective implementation of BSP. Because teachers often note that the availability of time precludes them from providing training to paraprofessionals (Biggs et al., 2016; Suter & Giangreco, 2009), it is important to identify efficient and effective training methods. Microlearning provides a potentially effective framework for conceptualizing paraprofessional training because of its emphasis on brief content delivery. As such, we developed a training approach based on the principles of microlearning to prepare

paraprofessionals to BSP, a low-intensity behavior management strategy. Across participant dyads, we observed increases in the paraprofessional use of praise with variable student level responding.

Coaching sessions were delivered through Facetime TM, phone calls, and in-vivo. Regardless of the coaching delivery method, paraprofessionals responded to the feedback and demonstrated improved implementation of the BSP strategy. Training programs that provide content (e.g. disability awareness, intervention use) through short digital means and provide paraprofessionals a space to practice and receive quick, meaningful feedback tailored to their context and needs may allow special educators to focus on the specific needs of their team members. In addition, the paraprofessionals that participated in the current study reported that the methods of training were a good match for their needs. For some, digital training may be enough as it was for Andrew, while for others, the addition of coaching provides an opportunity for clarification of the objectives. Demonstrated by the social-validity questionnaire, short-dosage training is supported by the participants as is the BSP strategy with promise for student level outcomes.

A second purpose of this research was to investigate the effects of a BSP strategy on levels of student engagement and disruptive behavior. The decrease in overall rates of disruptive behavior for two of the three students affirms the use of BSP as an effective, low-intensity strategy for students who display disruptive behaviors. While it certainly should not be the only strategy, equipping paraprofessionals with this intervention can improve their work with students. It should be noted that although overall disruptive rates did not decrease for Debbie, the demand on her did increase, as the rates of OTRs her paraprofessional delivered engaged her

more with the content. Similarly, her rates of independent response increased, which is another measure of success for BSP.

Lastly, an unintended discovery of this study was the use of the adapted praise boards. Both Andrew and Ely consistently paired the use of the adapted praise board as they would point to images on the board and deliver verbal praise statements simultaneously. Although this pairing was not measured, providing students with a visual depiction of the specific behavior being praised warrants further study, especially for students diagnosed with low-incidence disabilities.

Implications

The results of this study corroborate previous studies and the need to train our pre-service special educators of the methods in which to provide coaching and feedback to paraprofessionals (Andzik & Schaefer, 2020). Higher-education programs must take a deeper look and their preparation programs and consider management training of their future teachers. Brief coaching is feasible, *if* paraprofessionals are provided background content knowledge in skills matched to the environments and students they serve. The use of microlearning to facilitate content delivery is one avenue for the successful training of paraprofessionals. Finally, policy regarding the professionalization of the paraprofessional experience should be considered. As our students with the most intensive needs are often provided paraprofessional support, should we not provide a certification program to those who are willing to serve in the most intensive settings? Much like the work of a certified nursing assistant who is trained and equipped with technical skills to assist nurses in the heavy demands of their work, our paraprofessionals should be provided the acknowledgement of their learning through a structured training program.

Limitations

One limitation of the current study is that paraprofessional behaviors were used instead of student outcomes to determine when phase changes occurred. Improving student outcomes is central to the work of special education researchers and had student outcomes been used for phase changes to isolate the rates in which too much or too little praise was beneficial, has a place in the BSP literature. Similarly, counting paraprofessional reprimands may have also been a useful outcome measure as the rate of reprimands may have interacted with the effects of the praise statements. A secondary limitation of the study was the sole use of an indirect assessment to determine the function of the targeted disruptive behavior. While indirect assessments are quick methods to hypothesize the function of a student's behavior, descriptive assessments are susceptible to false positives when used in isolation (i.e. functional analysis; Hanley, 2012). Further, it was not the intention of researchers to have two paraprofessionals in the same classroom participate in the study and because of this there may have been some unintended carryover between participants. Finally, to mitigate the Hawthorne effect, the primary investigator did not conduct observations while in the classroom, although the presence of the video camera may have impacted the natural behaviors of the participants.

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Table 1

Summary of Video Training Content

Video number	Content	Delivery type	Duration (min)
1	Overview of BSP: provides definition, examples and non-examples, and settings in which BSP can be used.	PowerPoint Video with voiceover	6:08
2	Using BSP for academics: provides small group and individual examples of BSP for reading and math.	PowerPoint Video with voiceover & video modeling of PI using BSP with students	6:14
3	Using BSP for student behavior: provides small group and individual examples of BSP for praising student behavior.	PowerPoint Video with voiceover & video modeling of PI using BSP with students	3:02
4	Adapting BSP for students with alternative communication needs: provides methods for delivering BSP using visuals and students preferred method of communication.	PowerPoint Video with voiceover & video modeling of PI using BSP with students	3:53

Table 2

Descriptive Statistics and Effect Sizes for Each Phase for Dyads 1 and 3

Dyad	Condition	BSP			Generic praise	Disruptive behavior			Engagement		
		M (SD)	PND(%)	IRD	M (SD)	M (SD)	PND(%)	IRD	M (SD)	PND(%)	IRD
Andrew & Bryce	A	0.80 (0.52)			1.40 (0.74)	0.29 (0.21)			0.81 (0.12)		
		1.80 (0.19)			0.69 (0.27)	0.07 (0.12)			0.98 (0.02)		
	B	2.23 (0.49)	67	.83	0.16 (0.08)	0.15 (0.04)	0	.50	0.74 (0.05)	0	.33
		2.97 (0.59)	0	.25	0.87 (0.39)	0.19 (0.32)	33	.50	0.81 (0.02)	0	.25
	B'	3.90 (0.85)	67	.67	0.73 (0.79)	0.26 (0.08)	0	.33	0.93 (0.02)	100	1.0
		0.18 (0.20)			0.53 (0.16)	0.74 (0.19)			0.75 (0.13)		
Ely & Felix	A	0.58 (0.35)			0.64 (0.35)	0.07 (0.12)			0.91 (0.10)		
		2.16 (0.42)	67	.82	0.21 (0.19)	0.26 (0.20)	100	1.0	0.79 (0.04)	33	.45
	B	1.18 (0.35)	0	.38	0.65 (0.38)	0.43 (0.61)	25	.38	0.89 (0.07)	0	.17
		1.75 (0.31)	67	.71	0.92 (0.66)	0.14 (0.04)	0	.42	0.88 (0.06)	0	.12
	B'										

Note. BSP, generic praise and disruptive behaviors were calculated as rate per minute. Engagement was measured as the percent of intervals on-task and is represented in decimal form. A = baseline and withdrawal conditions; B = video training (acquisition) condition; B' = brief coaching condition. For PND and IRD, results are listed from A1 to B1, inclusive of training and coaching phase.

Table 3

Descriptive Statistics and Effect Sizes for Each Phase for Dyad 2

Dyad	Condition	BSP			Generic praise	OTRs			Disruptive Behavior			Independent Responses		
		M (SD)	PND(%)	IRD	M (SD)	M (SD)	PND(%)	IRD	M (SD)	PND(%)	IRD	M (SD)	PND(%)	IRD
Caroline & Debbie	A	0.29 (0.13)			0.38 (0.13)	1.06 (0.40)			1.70 (0.70)			0.23 (0.30)		
	B	0.37 (0.15)			0.31 (0.16)	2.11(0. 54)			0.74 (0.48)			0.36 (0.19)		
	B'	1.30 (0.79)	50	.67	0.42 (0.31)	1.75 (0.17)	100	1.0	1.73 (0.82)	33	.33	0.53 (0.20)	17	.67
	A	0.95 (0.27)	0	.17	0.43 (0.33)	1.78 (0.33)	25	.38	2.10 (0.46)	25	.58	0.51 (0.51)	50	.58
	B'	1.23 (0.45)	50	.50	0.52 (0.26)	1.56 (0.23)	0	0	1.86 (0.86)	50	.50	0.55 (0.18)	0	.50

Note. BSP, generic praise, OTRs, disruptive behavior and independent responses were calculated as rate per minute. A = baseline and withdrawal conditions; B = video training (acquisition) condition; B' = brief coaching condition. For PND and IRD, results are listed from A1 to B1, inclusive of training and coaching phase.

Figure 1

Graphed Results of Andrew and Bryce's Outcomes as a Function of Each Design Phase

Note. VT = video training (acquisition) phase; BSP = behavior specific praise.

Figure 2

Graphed results of Ely and Felix's Outcomes as a Function of Each Design Phase

Note. VT = video training (acquisition) phase; BSP = behavior specific praise.

Figure 3*Graphed Results of Caroline and Debbie's Outcomes as a Function of Each Design Phase* **Note.** VT = video training (acquisition) phase; BSP = behavior specific praise.

Figure 4

Graphed Results of Caroline and Debbie's Outcomes as a Function of Each Design Phase

Note. VT = video training (acquisition) phase; OTR = opportunities to respond.

Supplemental Materials

Figure 1S

Coaching Protocol and Fidelity Checklist

Item	Completed? Y/N
Greeting	
Ask about video dosage: <ul style="list-style-type: none"> Ex: Were you able to watch all the videos? 	
Ask about intervention: <ul style="list-style-type: none"> Ex: Do you have any questions about behavior specific praise? 	
Ask about student: <ul style="list-style-type: none"> Ex: Do you have any questions about working with your student? 	
Ask about goal setting: <ul style="list-style-type: none"> Ex: Have you thought about setting a goal for BSP? 	
Set the goal <ul style="list-style-type: none"> Ex: Work with the participant to set up goal on feedback form for following week. 	
Closing <ul style="list-style-type: none"> Ex: Reminder participant about feedback phase and send them the self-event recording form 	
Notes:	

Figure 2S.

Self Event Recording of BSP

Behavior Specific Praise Statement Checklist
The statement is positive <i>Example: Thumbs-up, I like, Thank you, Excellent</i>
The statement names a behavior <i>Example: hands to self, taking turns, using a break card</i>
The statement is specific <i>Examples: “Jenna, I like how you kept your hands to yourself.” “Oliver, great work raising your hand to ask for a break”.</i>
Non-examples: Great job. Good work. That’s not nice.

<i>Participant Name:</i>	<i>Time of session START:</i>
<i>Date of session:</i>	<i>Time of Session END:</i>
<i>Frequency of BSP (use tally marks each time you make a BSP statement that fits the criteria)</i>	

Did I meet my goal for today? ____ Yes ____ No

My goal for tomorrow is _____ BSP statements in _____ minutes.

Figure 3S.

Sample Adapted BSP Boards

Figure 4S

Social Validity Questionnaire

Please rate the following items using the scale. 1 strongly disagree to 5 strongly agree.

<i>Item</i>	<i>Ranking</i>
<i>Applicability</i>	
The training videos were applicable to me.	1 2 3 4 5
The coaching sessions were applicable to me.	1 2 3 4 5
The intervention, Behavior specific praise was applicable to my student.	1 2 3 4 5
<i>Feasibility</i>	
Training through video was convenient for my schedule.	1 2 3 4 5
The tele-coaching was convenient for my schedule.	1 2 3 4 5
This model of training and coaching could be applied to other areas of paraprofessional training.	1 2 3 4 5
<i>Usefulness</i>	
The behavior specific praise intervention was useful to my career.	1 2 3 4 5
The behavior specific praise intervention was useful for my student.	1 2 3 4 5
<i>Outcome measures</i>	
Reducing disruptive student behaviors is important.	1 2 3 4 5
Increasing student engagement is important.	1 2 3 4 5
Training for paraprofessionals is important.	1 2 3 4 5
<i>Other comments:</i>	